uniform raw gel on the molds at a temperature from 60 to 80°C. It is pointed out that the salts mentioned have a tixotropic effect, which is a big disadvantage when used as thermosensitizing agents. Figure 6 shows that the optimum temperature of the mold in the mixture is 70°C, so that with a holding time of 60 sec the thickness of the vulcanized film is 0.8 mm. The method for producing thermosensitized mixtures by introducing a coagulant into a protected latex was also investigated based on Reference 12 and the possibility of obtaining thermosensitizing mixtures with OP-10 on the L-4 latex and a few batches of experimental SKS-30 latex was shown. There are 7 graphs and 12 references: 2 Soviet, 7 English, 2 French and 1 German.

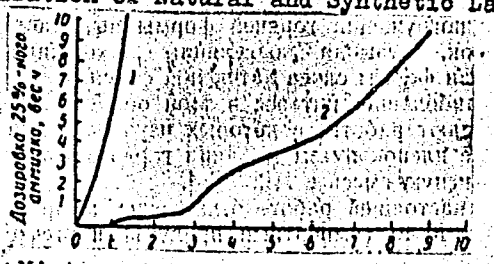
ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy i lateksnykh izdeliy (Scientific-Research Institute of Rubber and Latex Products)

S/138/60/000/010/002/008
A051/A029

Thermo-Sensitization of Natural and Synthetic Latexes

Fig. 1

Dosage of 25%-ammonia, weight parts



Mixture stability at 25°C, days

Change in the stability of the latex containing a zinc-ammonium complex, depending on the amount of the introduced ammonia:

1-latex L-4; 2-qualitex

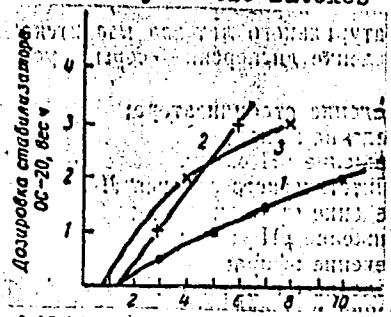
Card 5/7

89060

S/138/60/000/010/002/008
A051/A029

Thermo-Sensitization of Natural and Synthetic Latexes

Fig. 2



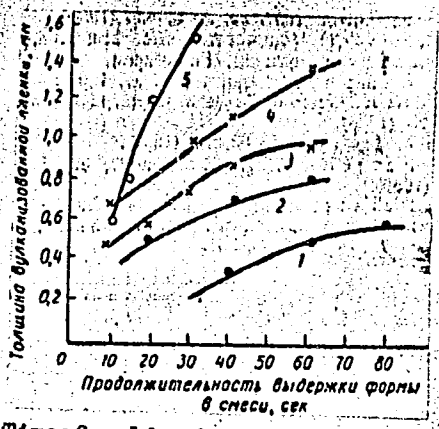
Stabilizer dosage; OS-20 w.p.

stability of the mixture at 25°C, days

Effect of anions on the activity of the zinc-ammonium complex in the qualitex
1-NH_4Cl; 2-NH_4NO_3; 3-$(NH_4)_2SO_4$

Card 6/7

Figure 6: Kinetics of deposit of the mixtures from revultex with sodium salt of mercaptobenzoimidozol. 1 - 60°; 2 - 80°; 3 - 90°; 4 - 100°; 5 - 120°.



thickness of vulcanized film, mm

Timeof mold submersion in the mixture, sec.

Card 7/7

S/727/61/000/000/005/009
I031/I242

AUTHORS: Znamenskiy, N.N., Chernaya, V.V., Novikov, V.I.

TITLE: Effect of ultrasonic waves on the properties of chloroprene latex

SOURCE: Sintez lateksov i ikh primeneniye. Ed. by A.V. Lebedev, A.B. Peyzner, and N.A. Fermor. Leningrad, Goskhimizdat, 1961, 163-169

TEXT: Long-chain polymers undergo structural changes as a result of the dispersing effect of ultrasonic waves. The effect of ultrasonic waves on a colloidal solution and on the polymer contained in it was studied. Particular attention was given to the α - and μ- polymers in a chloroprene latex. Specimens containing 46.3% of polymer were exposed to ultrasonic waves of 22 and 300 kc. It was found that a 90 min exposure produces an insignificant effect on viscosity, starting point of coagulation, pH of solution, and solubility of the rubber in dichloroethane. The extent of adsorption of emulgator on particle surface is diminished so that the mean diameter of par-

Card 1/2

S/727/61/000/000/005/009
I031/I242

Effect of ultrasonic waves...

ticles decreases. This phenomenon indicates the dispersing effect of ultrasonic action on latex particles. A destructive effect of ultrasonic waves on an α -polymer dissolved in dichloroethane was observed, accompanied by a reduction in the viscosity of the solution. The μ -polymer, with a highly stable structure is affected to a slight extent. Only 7.76% dissolves in dichlorethane upon a 6 hrs exposure to 300 kc ultrasonic waves. There are 2 figures and 5 tables.

ASSOCIATION: NIIR

Card 2/2

L 42210-66 EWT(m)/EWP(j)/T/EWP(k) IJP(c) RM/DJ/GD

ACC NR: AT6013179 (A) SOURCE CODE: UR/0000/61/000/000/0145/0165

AUTHORS: Znamenskiy, N. N.; Selivanov, O. A.; Fomina, L. S.; Chernaya, V. V. 63 61 B+1

ORG: none

TITLE: Some investigations of the application of ultrasound in industrial processing of resin

SOURCE: Moscow. Oblastnoy pedagogicheskiy institut. Primeneniye ul'traakustiki k issledovaniyu veshchestva, no. 14, 1961, 145-165

TOPIC TAGS: ultrasound, emulsion, chloroprene, natural rubber, polymer degradation, elastic oscillation, ultrasonic wave propagation

ABSTRACT: Application of ultrasound in production control was investigated along the following lines: propagation velocity of ultrasonic waves as a function of the composition and method of processing resins; effect of ultrasound on natural rubber in benzene, chloroprene in dichloroethane, and chloroprene latex; application of ultrasound to intensify production of aqueous emulsions of plasticizers and to finely disperse ingredients of latex mixtures. A definite relationship was found between the propagation of elastic vibrations and the properties and compositions of rubbers and resins. Natural rubber in benzene solution is degraded when treated with ultrasound from 22 to 1000 kHz, the process depending upon the ultrasound intensity, as shown in Fig. 1. Ultrasound also degrades α-chloroprene in dichloroprene,

Card 1/2

L 42210-66

ACC NR: AT6013179

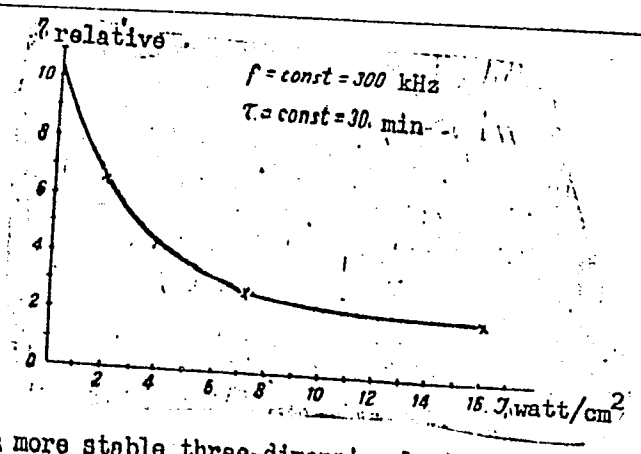


Fig. 1. Degree of polymer degradation as a function of the ultrasound intensity.

while the μ-polymer, which has a more stable three-dimensional structure, is dissolved to an insignificant extent in the solvent. A detailed description of the process for preparing finely dispersed zinc oxide and water-oil emulsions is given, and diagrams of the equipment are shown. Orig. art. has: 6 tables, 5 equations, and 18 figures.

SUB CODE: 11, 20/ SUBM DATE: 22Apr61

Card 2/2 af

ZNAMENSKIY, N.N.; SELIVANOV, O.A.; FOMINA, L.S.; CHERNAYA, V.V.

Studies in the field of ultrasound application in rubber technology. Prim. ul'traakust. k issl. veshch. no.14:145-165 '61. (MIRA 14:12)
(Elastomers--Testing)
(Ultrasonic waves--Industrial applications)

VOYUTSKIY, S.S.; SAVINKOVA, A.M.; CHERNAYA, V.V.

Gelation of carboxyl containing latexes with the help of diphenylguanidine and sodium fluosilicate in presence of zinc oxide. Kauch. i rez. 20 no.8:4-8 Ag '61. (MIRA 14:8)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy i Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.
(Latex) (Gelation)

CHERNAYA, V.V.; MAZINA, G.R.

Some pecularities of vulcanizing films made of chloroprene latex. Kauch. i rez. 20 no.9:8-11 S '61. (MIRA 15:2)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.

(Vulcanization)
(Latex)

CHERNAYA, V.V.

15-9300

31622
S/138/61/000/012/006/008
A051/A126

AUTHORS: Gol'berg, I.I.; Zil'vestr, E.Ya.; Zubkova, Yu.D.; Mayzelis, B.A.; Chernaya, V.V.

TITLE: The effect of the degree of expansion of gel on the tear elongation of vulcanized meteorological radio-probing balloons

PERIODICAL: Kauchuk i rezina, no. 12, 1961, 35 - 37

TEXT: A study was made of the effect of the preliminary degree of expansion of gels on the tear elongation of the vulcanized balloons nos. 100 and 150; the optimum degree of the gel expansion was established. A square parabolic relation is derived between the tear elongation of the vulcanized balloons and the elongation of the crude gel. Soviet meteorological balloon-probes are produced from polychloroprene latex, Л-17 (L-17), by the ionic depositing method. The present article describes the results of the investigations of balloons with an initial diameter of D_o = 100 cm (No. 100) and D_o = 150 cm (No. 150). The balloons were produced from a mixture of L-17 and 15% dibutylsebacynate ДБС (DBS), as antifreeze. The degree of expansion of the gel (λ_g) was determined as the ratio of the diameter of the expanded balloon

Card 1/4

The effect of the degree of expansion of ....

from gel, D_g, to its diameter in an expanded state D_o (prior to expansion of the gel walls). The air volume necessary to expand the gel was determined with a gas meter -100 (RS-100). D_g was estimated from the formula of the sphere volume. D_o was estimated from the air volume used to inflate the balloon. The tear elongation λ_{tear} of the vulcanized balloons was determined from the ratio of the air volume within the balloons at the moment of tear V_{tear}, to the tear volume V_o needed to expand the balloon :

$$\lambda_{tear} = \sqrt[3]{\frac{V_{tear}}{V_o}} . \qquad (1)$$

V_{tear} and V_o were counted by the diaphragm, mounted on the suction socket of the air blower. A mathematical relation is established between the tear elongation of the vulcanized balloons and the degree of the preliminary expansion of the gels. It is assumed that the relation $\lambda_{tear} = f(\lambda_g)$ can be expressed by the equation of the square parabola:

$$\lambda_{tear} = a\lambda_g^2 + b\lambda_g + c . \qquad (2)$$

The average tear elongations of the balloons were calculated using (2) at various degrees of gel elongation. The assumption of the parabolic-shape relation be-

The effect of the degree of expansion of ....

tween λ_{tear} and λ_g is tested by calculating the coefficient of the parabolic regression η according to the formula:

$$\eta = \sqrt{\frac{s^2 \lambda_{calc.}}{s^2_\lambda}} \qquad (3)$$

where $s^2 \lambda_{calc.}$ is the dispersion of the calculated average values of the tear elongation of the balloons around the general average of experimental values, s^2_λ the dispersion of the experimental values of the tear elongations around their general average. When $\eta = 1$, there is a functional square parabolic relationship between λ_{tear} and λ_g. If $\eta = 0$, then the assumption is erroneous. If η lies between 0 and 1, then the evaluation is made according to the formula: $A = \eta\sqrt{N-1}$ (4), where N is the number of tests. If $A > 3$, then η differs significantly from 0, i.e., there is a relation between λ_{tear} and λ_g close to a parabola. If $A < 3$, then η differs slightly from zero and there is no parabolic relation between them. At a given degree of expansion of the gel, a redistribution of the tension takes place, connected with the smoothing out of the gel along the thickness. Thus, the gel becomes more uniform in its properties, resulting in higher values of tear elongation of the vulcanized balloons. At low degrees of gel expansion, expansion of the less dense or thin-

Card 3/4

The effect of the degree of expansion of ....

ner parts of the gel takes place due to non-uniformity. At further progress of deformation, the uniformity of the gel will be upset due to partial destruction of the bonds between the various globules and this, in turn, will lead to a drop in the tear elongations of the vulcanizates. There is 1 figure and 4 Soviet-bloc references.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

S/138/62/000/001/005/009
A051/A126

AUTHORS: Shepelev, M.I.; Sandomirskiy, D.M.; Chernaya, V.V.; Trofimovich, D.P.

TITLE: Aging of chloroprene latex

PERIODICAL: Kauchuk i rezina, no. 1, 1962, 19 - 23

TEXT: An investigation was carried out on the processes and changes taking place in latexes during their production and subsequent transportation. The property changes of the gels and vulcanized films were studied. Serial production chloroprene latex Л-7 (L-7) was chosen for the experiments, involving fast aging and storage under natural conditions. Data on the former are submitted. The colloido-chemical properties of the latex were evaluated according to: pH-value, alkalinity, dry-substance content, surface tension, viscosity, degree of globule bubble saturation and particle size. The physico-mechanical properties of the raw gel were determined according to the dimetric deformation method by gel expansion, using a special instrument (Fig. 1). The physico-mechanical properties of the vulcanized films were determined according to GOST 270-53. The equilibrium index was calculated according to the NIIRP method. The experi-

Card 1/3

Aging of chloroprene latex

ments showed that in aging, the latex properties change, both in the colloidal system as well as to polymer properties. The aging decreases the surface tension, increases the rate of ionic deposit and moduli of the dimetric gel expansion, it decreases its tensility and relative elongation, reduces the residual elongation and increases the vulcanized film modulus. The technological properties of the latex in aging deteriorate. The aging of the chloroprene latex as a colloidal system is associated with the aggregation of globules. Structuralizing of the polymer takes place due to aging of the chloroprene latex. There are 2 tables and 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

S/019/62/000/005/002/010
A051/A126

AUTHORS: Vdovchenkova, M.K.; Chernaya, V.V.

TITLE: Properties of chloroprene latexes L-3 and L-4 and their changes due to aging

PERIODICAL: Kauchuk i rezina, no. 5, 1962, 4 - 6

TEXT: Extensive tests were carried out to determine the properties of latexes, raw gels and vulcanizates produced according to the ionic-deposit and gelatinization methods, before and after aging. Aging was achieved by natural and synthetic methods. Obtained data showed that the two latexes, L-3 and L-4, differ in their content of dry substance and their surface tension. L-4 always has a greater concentration than L-3, but a lower surface tension. The L-4 latex polymer has a magnitude of maximum swelling almost twice that of L-3, a less dense lattice structure and twice the solubility in benzene. The resilience of L-3 latex polymer reaches 63% and that of L-4 about 50%. The physico-mechanical properties of the raw gels produced by the ionic-deposit method were determined according to Medolia's method. The gels produced by the gelatinization method

Card 1/2

Properties of chloroprene latexes ....

were determined on the "Shopper" machine. The experiments on polymer properties in aging of the latex led to the following conclusions: 1) In the aging of L-4 the amount of soluble fraction and swelling maximum of the polymer are considerably reduced; 2) the polymer properties in the L-3 latex do not undergo great changes. The physico-mechanical properties of the vulcanizates change with the aging of the latexes. Two major conclusions are drawn: 1) The chemical composition, various colloidal-chemical properties and polymer properties do not reflect the commercial properties of the latex, nor the stability of same as a colloidal system. 2) The properties of the raw gels, their vulcanizates and the value of the calcium equivalent have a satisfactory correlation both with the commercial properties as well as with the stability of the latex. The higher the stability and the relative elongation of raw gel and vulcanizate, and the value of the calcium equivalent, the better the commercial properties and the more stable are the latexes to natural and artificial aging.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

S/138/62/000/006/002/008
A051/A126

AUTHORS: Znamenskiy, N.N., Fomina, L.S., Chernaya, V.V.

TITLE: Ozone- and light-proofness of films based on L-7 latex in two--dimensional expansion

PERIODICAL: Kauchuk i rezina, no. 6, 1962, 6 - 8

TEXT: An investigation was conducted on the ozone-proofness of vulcanized films based on Л-7 (L-7) latex under two-dimensional expansion, depending on degree of expansion, ozone concentration and addition of masticator. The ozone- and light-protecting effect of certain nickel salts (dithiocarbamates, xanthogenates, etc.), was also investigated. It was found that in two-dimensional expansion the degree of expansion affects the ozone-proofness of the films much more than it does in one-dimensional expansion. The test samples for ozone-aging resistance were prepared by the ionic deposition method on special glass forms like 20 mm diameter spheres. Dibutylsebacynate, in quantities of 5 to 20% per polymer, was used as masticator. The following nickel salts were studied: Ni dibutyldithiocarbamate, Ni diethyldithiocarbamate, Ni diisopropyldithiocarbamate, Ni diisoamyldithiocarbamate, Ni mercaptobenzothiazolate, Ni mercaptobenzoimideasolate, Ni

Card 1/2

S/138/62/000/006/002/008
A051/A126

Ozone- and light-proofness...

propylxanthogenate, Ni isoamylxanthogenate and Ni isobutylxanthogenate. 200 mm diameter spherical samples were prepared for studying the light-proofness. Experimental data showed that the ozone-proofness of samples with dibutylsebacynate is much lower than of those without a masticator. The action of Ni xanthogenates was compared to that of Ni dibutyldithiocarbamate. It was found that the best protection against ozone in films containing a masticator is obtained with Ni dibutyldithiocarbamate, at a concentration of about 3% per polymer, and the best protection against light-ozone aging is obtained with Ni isopropylxanthogenate. The indicated salts and methods are recommended for industrial use. There are 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

Card 2/2

S/138/62/000/007/002/002
A051/A126

AUTHORS: Gol'berg, I.I.; Mayzelis, B.A.; Chernaya, V.V.; Shepelev, M.I.

TITLE: The nature of the scale factor in testing the mechanical properties of radio-sounding casings

PERIODICAL: Kauchuk i rezina, no. 7, 1962, 38

TEXT: A study was made to determine the effect of casing dimensions on the mechanical properties, characterized by the scale factor K. K expresses the ratio of the average tear elongation of the capsule $\overline{\lambda_1}$ to the average tear elongation of the sample, $\overline{\lambda_2}$, of the initial area 0.0113 m^2:

$K = \frac{\overline{\lambda_1}}{\overline{\lambda_2}}$. The tear elongation was determined from: $\lambda_1 = \sqrt[3]{\frac{V_{tear}}{V_o}}$, where

V_{tear} is the volume of the casing at the moment of tear, V_o - the initial volume of the casing. The tear elongation of the samples was determined on an instrument of double latex-film deformation. Data obtained showed the average tear

Card 1/2

The nature of the scale factor in ....

elongation to be equal for samples taken from various casing sizes. The change of K, depending on the initial surface of the casing, is explained by the statistic theory. The experimental data correspond to the statistic theory of tenacity and explain the effect of the sample sizes on the mechanical characteristics. There is 1 figure.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

Card 2/2

40071

S/138/62/000/008/003/007
A051/A126

15.9130

AUTHORS: Voyutskiy, S. S., Savinkova, A. M., Chernaya, V. V.

TITLE: The effect of nature and quality of a stabilizer on the gelatinization of latexes

PERIODICAL: Kauchuk i rezina, no. 8, 1962, 7 - 12

TEXT: A study was made on the effect of quality and the nature of a stabilizer, present in chloroprene latexes, on the gelatinizing process with a zinc-ammonia complex, and on the properties of the obtained raw gels and the vulcanized film. Experiments showed that with an increase in the quantity of stabilizer in the latex the rate of gelatinization drops. If, however, the gelatinizing of the latexes is conducted with a quantity of gelatinizing agents proportional to that of stabilizer in the latex, then the duration of the gelatinization of the latexes will be the same. With an increase in the quantity of stabilizer in the latex the rate of syneresis of the gel drops. The tensile strength and relative elongation of the raw gels decrease with an increase of stabilizer content in the latex. The latter has little effect on the tensile properties of the vul-

Card 1/2

The effect of nature and...

canized gels. The rate of syneresis and the tensile properties of the raw gels drop in direct proportion to the degree of saturation by the stabilizer of adsorption globule shells in the initial latexes. Raw gels with the highest tensile properties are produced from latexes stabilized by a mixture of salts of petroleum sulfo-acids and colophony soap. The nature of the stabilizer contained in the latex has little effect on the physical and mechanical properties of the vulcanized gels. The effect of the nature of the stabilizer on autogeny was studied by experiments to determine the strength of adhesion of two polychloroprene surfaces with an intermediate layer of stabilizer, used in the production of the latexes. With an increase in the thickness of the layer of any stabilizer the resistance to foliation drops sharply. Thus, it was established that there is a definite relation between the tensile properties of the raw gels from latexes containing various stabilizers and the effect of the corresponding stabilizer on the autogeny of polychloroprene. There are 3 tables and 7 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

Card 2/2

S/138/62/000/010/005/008
A051/A126

AUTHORS: Gol' berg, I.I., Mayzelis, B.A., Savtsov, N.Z., Chernaya, V.V., Shepelev, M.I.

TITLE: Automatic instrument for two-dimensional deformation of rubber film

PERIODICAL: Kauchuk i rezina, no. 10, 1962, 43 - 46

TEXT: An automatic instrument for testing rubber film under expansion in two mutually-perpendicular directions has been developed, based on the method of elongation measurement. The new instrument, which can determine the relation, tension-elongation and tear characteristics of the rubber film in two-dimensional deformation, is said to be devoid of the disadvantages of previous similar instruments. The main advantage of subject instrument is the automatic recording of results, thermostating ease of the sample, simplicity and economy of construction. The relation between a, the length of the horizontal semi-axis and the elongation at the peak of the ellipsoid λ, and the height of the ellipsoid H is experimentally determined: $a = 1.75\lambda - 2.75$ (1), $H = 1.59a$ (2). The tension is calculated from formula:

$$\sigma = \frac{P\,(a + 2.75)^2\,a}{4.9\,t_0}\,, \qquad (8)$$

derived from the Laplace equation

$$\sigma = \frac{P\,R_{circle}}{2t}\,, \qquad (4)$$

where P is the excess pressure under the film sample, t - thickness of the expanded film, R_{circle} - radius of the ellipsoid curvature at the place of tear, i.e., at the center of the sample, equal to the radius of an ellipse in the same cross section, calculated from formula:

$$R_{cir.} = \frac{a^2}{h}\,, \qquad (5)$$

where a is the horizontal semi-axis of the ellipsoid; h - vertical semi-axis of the ellipsoid. In (8) σ is the tension on the true cross section of the sample, kgf/cm^2; P - the air pressure under the sample, kgf/cm^2; a - the length of the horizontal semi-axis of the ellipsoid, cm; t_0 - the thickness of the non-inflated sample, cm. The ПДД (PDD) instrument (Fig. 2) has an elongation pickup (Fig. 4) which is a rheostat of 214 ohm resistance. The pressure pickup repre-

Automatic instrument for two-dimensional ....

sents a pressure-meter (Fig. 5), with a resistance of 214 ohm, sensitivity 6 - 8 mm water column. The ЭМП-209 (EMP-209) instrument is used for recording results having an index variation half that of the Shopper-type dynamometer. There are 6 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

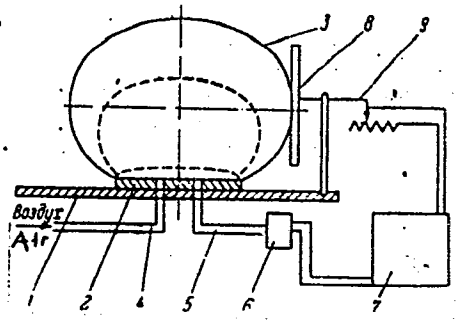


Figure 2: Diagram of the automatic instrument for two-dimensional deformation of rubber films: 1 - horizontal panel; 2 - clamp; 3 - sample; 4 - air supply pipe; 5 - pipe; 6 - pressure pickup; 7 - registering instrument; 8 - disk; 9 - rod

Card 3/4 3

VDOVCHENKOVA, M.K.; CHERNAYA, V.V.

Properties of L-3 and L-4 chloroprene latexes and changes occurring in them due to aging. Kauch.i rez. 21 no.5:4-6 My '62. (MIRA 15:5)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.
(Rubber, Synthetic--Testing)
(Chloroprene)

GOL'BERG, I.I.; MAYZELIS, B.A.; CHERNAYA, V.V.; SHEPELEV, M.I.

Nature of the scale factor in testing the mechanical properties of radiosonde envelopes. Kauch.i rez. 21 no.7:38 Jl '62. (MIRA 15:7)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.
(Radiosondes) (Rubber goods—Testing)

VOYUTSKIY, S.S.; SAVINKOVA, A.M.; CHERNAYA, V.V.

Effect of the nature and amount of the stabilizer on latex gelatinization. Kauch.i rez. 21 no.8:7-12 Ag '62. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut rezinovykh i latekskykh izdeliy.

(Latex)

S/074/62/031/003/002/002
B117/B101

AUTHORS: Chernaya, V. V., and Vol'chenko, R. L.

TITLE: Ways of increasing frost resistance of polymers

PERIODICAL: Uspekhi khimii, v. 31, no. 3, 1962, 336-350

TEXT: This is a survey on progress made in the development of methods for increasing frost resistance of polymers. The possibilities of maintaining the utilizability of polymers even at low temperatures were studied. The studies were directed to lower the vitrification temperature of polymers and to reduce their crystallizability. In a summarizing statement it is pointed out that there exist three methods for increasing the frost resistance of polymers, i.e.: 1) plastification by which the vitrification temperature can be lowered, 2) modification and 3) copolymerization. The latter two methods, employed to increase frost resistance of crystalline polymers, do not lower the vitrification temperature. Therefore the frost resistance of such polymers, having relatively high vitrification temperature must be increased by adding simultaneously either softeners and modifiers, or the copolymers have to

Card 1/2

Ways of increasing frost...

undergo a plastification process after the copolymerization. Mention is made of: G. M. Bartenev, P. P. Kobeko, A. P. Aleksandrov, Yu. S. Lazurkin, V. A. Kargin, G. L. Slonimskiy, S. N. Zhurkov, S. I. Sokolov, R. I. Fel'dman, P. V. Kozlov, Ye. F. Russkova, Yu. M. Malinskiy, V. A. Voskresenskiy, Sh. L. Lel'chuk, V. I. Sedlis, S. S. Voyutskiy. There are 13 figures, 9 tables, and 78 references: 34 Soviet and 44 non-Soviet. The four most recent references to English-language publications read as follows: P. Swift, Rubb. Journ., 138, 352 (1960); J. I. Cunneen et al., Engl.pat. 24339 (1954); Rub. Chem. a Techn., 23, 39 (1960); W. J. Burke, US pat. 2416434 (1947); Rub. Chem. a. Techn. 23, 39 (1960); L. W. Richards, US pat. 2420194 (1947); Rub. Chem. a. Techn. 23, 39 (1960).

ASSOCIATION: N.-i. in-t rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Products)

Card 2/2

ACCESSION NR: AT4017413 S/0000/63/000/000/0094/0099

AUTHOR: Kryazhev, Yu. G.; Rogovin, Z. A.; Chernaya, V. V.

TITLE: Synthesis of new derivatives of cellulose and other polysaccharides. XL. Preparation of a grafted cellulose-polymethylvinylpyridine copolymer without intermediary formation of a homopolymer

SOURCE: Tsellyuloza i yeye proizvodny*ye, sbornik statey (Cellulose and its derivatives). Moscow, 1963, 93-99

TOPIC TAGS: cellulose, polysaccharide, cellulose derivative, copolymer, grafted copolymer, cellulose copolymer, polymethylvinylpyridine

ABSTRACT: Grafted copolymers were synthesized from 2-methyl-5-vinylpyridine phosphate, chloride, sulfate, acetate, oxalate or citrate, their quaternary salts (prepared by reacting with dimethylsulfate) and cellulose which had been alkylated with 4-β-hydroxyethylsulfonyl-2-aminoanisole and subsequently diazotized in the presence of $FeCl_2$, CuCl, Na_2S, $K_2S_2O_5$, $Na_2S_2O_4$, $Na_2S_2O_3$, Na_2SO_3 and CH_2O as the reducing agents, without intermediary formation of a homopolymer. The copolymers, depending on the particular vinylpyridine salt used, its concentration, the molar ratio between vinylpyridine and the acid used, and the particular reducing agent,

Card 1/2

ACCESSION NR: AT4017413

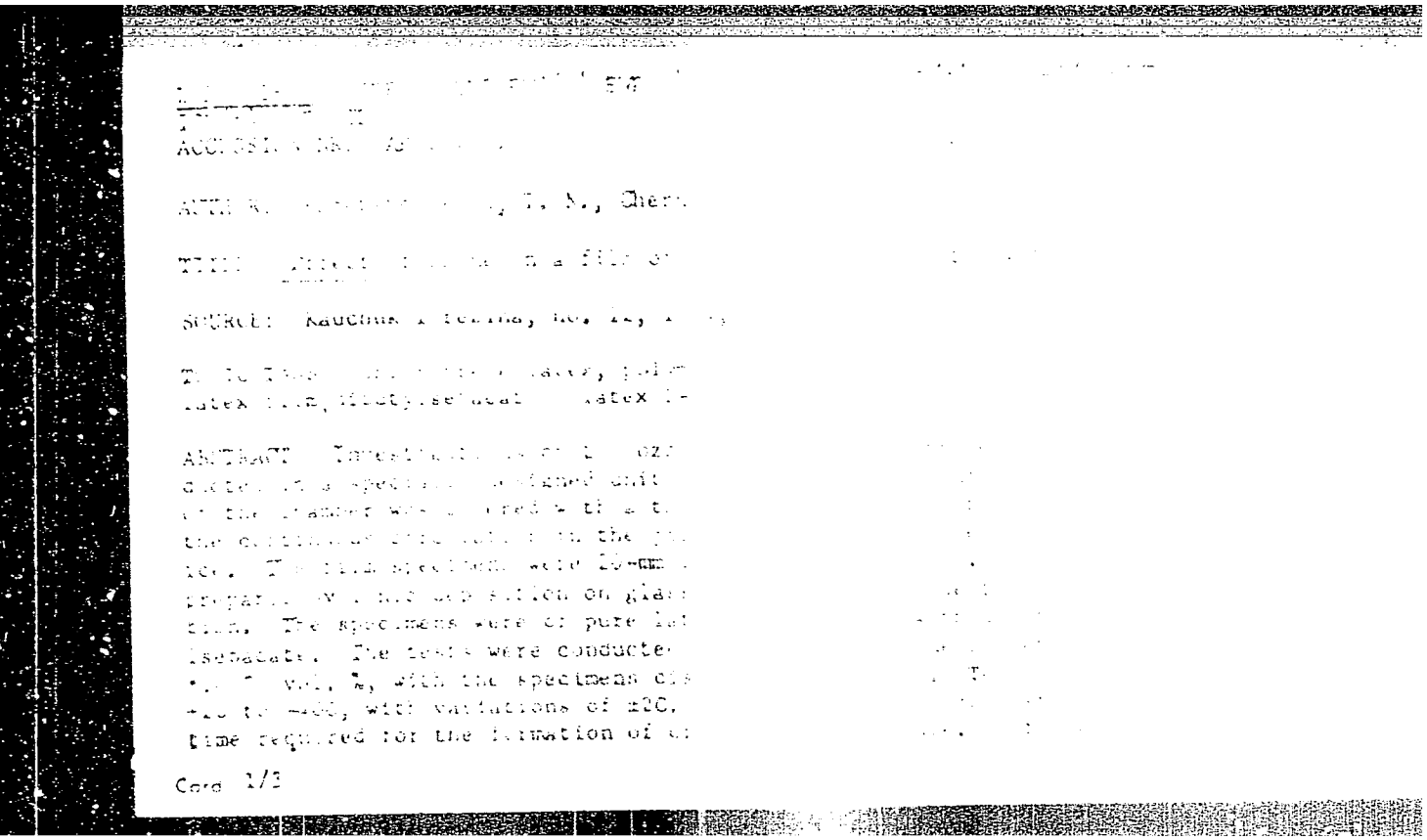
contained up to 57.2% implanted methylvinylpyridine. The highest yield was obtained with the phosphate using $FeCl_3$ and CuCl as reducing agents. The anion exchange ability of the copolymers reached 2.4 meq/g and fabrics made from them were strong and light-resistant. The length of the side chains in these copolymers is about 1/10 of that in the macromolecules of a grafted copolymer prepared by chain substitution. The preparative procedure is given in detail. Orig. art. has: 3 tables and 1 graph.

ASSOCIATION: Moskovskiy tekstil'ny*y institut (Moscow Textile Institute)

SUBMITTED: 16Jul62 DATE ACQ: 06Jan64 ENCL: 00

SUB CODE: OC, MT NO REF SOV: 003 OTHER: 003

Card 2/2



Core 1/3

L 22631-65 1
ACCESSION NR: AP5001501

ature, the ozone stability of pure [illegible]
[illegible] stability at [illegible], the stabili[illegible]
ture, attaining values [illegible] over 85% a[illegible]
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ture starting from [illegible] ambients to [illegible]
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the risk for such buildings. Orig. [illegible]

ASSOCIATION: Nauchno-issledovatel'[illegible]
(Rubber and latex products scientif[illegible]

SUBMITTED: [illegible]

NO REF SOV: 004 OTHER: 004

Card 2/3

coils for cooling the air; 4 - fan; 5 - ultra-thermostat; 6 - specimen; 7 - air;

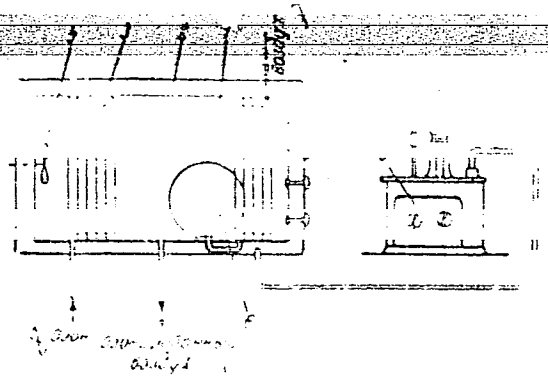

Figure 1. Apparatus for studying [illegible] tures.

Card 3/3

L 27268-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR AP4011310 S/0069/64/026/001/0072/0075

AUTHOR Mazira G. R.; Pechkovskaya V. A.; Chernaya, V. V. 26

TITLE Electron microscopic investigation of latex gel structures

SOURCE Kolloidnyy zhurnal, v. 26, no. 1, 1964, 72-75

TOPIC TAGS: latex gel, latex film, structure, syneresis, drying, vulcanization, polychloroprene

[illegible] to become more homogeneous [illegible]

[illegible]

L 27268-65

shrinkage. The electron microscope

SUBMITTED: 26

SUB CODE: MT

Card 2/2

CHERNAYA, V.V., assistent

Functional state of the blood coagulation system in uterine fibromyomas. Akush.i gin. 35 no.6:75-79 N-D '59. (MIRA 13:4)

1. Iz akushersko-ginekologicheskoy kliniki (zaveduyushchiy kafedroy - prof. Ye.S. Akopyan) i kafedry patofiziologii (zaveduyushchiy - prof. I.A. Oyvin) Kubanskogo meditsinskogo instituta imeni Krasnoy Armii.
(LEIOMYOMA blood)
(UTERUS neopl.)
(BLOOD COAGULATION)

CHERNAYA, V.V.

Functional state of the system of blood coagulation in surgical therapy for fibromyoma of the uterus. Akush. i gin. 36 no.3:100-102 My-Je '60. (MIRA 13:12)
(UTERUS—TUMORS) (BLOOD—COAGULATION)

BALUDA, V.P.; CHERNAYA, V.V.; MALIAROVSKIY, V.N.; TSYNKALOVSKIY, I.B.; ROMANTSEVA, T.B.

Functional state of the blood coagulation system in healthy subjects. Probl. gemat.i perel. krovi 6 no.1:59-61 '61. (MIRA 14:2)
(BLOOD—COAGULATION)

BALUNDA, V.P.; CHERNAYA, V.V.

Clinical significance of so-called prothrombin time. Lab. delo 7 no.2:27-30 F '61. (MIRA 14:1)

1. Kafedra patologicheskoy fiziologii (zav. - prof. I.A.Oyvin) i kafedra akusherstva i ginekologii (zav. - prof. Ye.S.Akopyan) Kubanskogo meditsinskogo instituta.
(PROTHROMBIN)

BALUDA, V.P.; CHERNAYA, V.V.

Pathogenesis, clinical aspects, and therapeutic principles in intravascular thrombogenesis. Akush.i gin. 37 no.2:48-56 F '61. (MIRA 14:3)

1. Iz kafedry patofiziologii (zav. - prof. I.A. Oyvin) i kliniki akushertva i ginekologii (zav. - prof. Ye.S. Akopyan) Kubanskogo meditsinskogo instituta.

(THROMBOSIS)

BALUDA, V.P.; CHERNAYA, V.V.

Problem of thromboplastic activity of the blood. Biul. eksp. biol. i med. 51 no.4:39-42 Ap '61. (MIRA 14:8)

1. Iz kafedry patologicheskoy fiziologii (zav. - prof. I.A.Oyvin) i kafedry akusherstva i ginekologii (zav. - prof. Ye.S.Akopyan) Kubanskogo medisinskogo instituta, Krasnodar. Predstavlena akademikom V.N.Chernigovskim.

(THROMBOPLASTIN)

CHERNAYA, V.V.

Role of modified anticoagulant activity of the blood in the mechanism of increased coagulability following an operation. Kaz.med. zhur. no.1:42-43 Ja-F'61 (MIRA 16:11)

1. Klinika akuszerstva i ginekologii (zav.-prof. Ye.S.Akopyan) i kafedra patologicheskoy fiziologii (zav.-prof. I.A.Oyvin) Kubanskogo meditsinskogo instituta.

*

CHERNAYA, V.V.

Pathogenesis of hemorrhages during labor and in early puerperium. Akush. i gin. 40 no.2:60-65 Mr-Ap '64.

(MIRA 17:11)

1. Kafedra akusherstva i ginekologii (zav. - prof. Ye.S. Akopyan [deceased]) i kafedra patologicheskoy fiziologii (zav. - prof. I.A. Oyvin) Kubanskogo meditsinskogo instituta, Krasnodar.

CHERNAYA, Ye.N. [Chorna, IE.R.] (Novaya Kakhovka); CHERNOV, N.I. [Chornov, M.I.] (Novaya Kakhovka)

Investigating the deformation of thin-walled rods subjected to skew bending beyond elastic limit. Prykl. mekh. 10 no.5:492-502 '64. (MIRA 17:10)

1. Odesskiy inzhenerno-stroitel'nyy institut.

CHERNAYA, Ye.R. (Novaya Kakhovka)

Investigating deformations of thin-walled bars subjected to oblique bending and torsion beyond the elastic limit. Prikl. mekh. 1 no.11:71-80 '65. (MIRA 19:1)

1. Odesskiy inzhenerno-stroitel'nyy institut. Submitted Nov.11, 1964.

PEROTSKAYA, A.S.; RYABOV, V.N., kand.med. nauk; CHERNAYENKO, T.D.

Experience in conducting a seminar for public health physicians and laboratory personnel of sanitary and epidemiological institutions on problems of sanitary protection of soil in populated areas. Gig. sanit. 28 no.2:107-108 '63 (MIRA 17:2)

TOLEROVA, YE.G., CHERNAYENKO, T.D.

Water Supply

Conference on the problems of protection of water reservoirs and control of construction of water supply lines and of canalization. Gig. i san., no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, JUNE 1952 ~~1953~~ Unclassified.

CHERNAYENKO, T.D.

Hygienic evaluation of hospital construction in the German Democratic Republic. Gig. & san. 23 no.3:69-74 Mr '58. (MIRA 11:4)

1. Starshiy gosudarstvennyy sanitarnyy inspektor. Iz Glavnoy gosudarstvennoy sanitarnoy inspektsii SSSR.

(HOSPITALS
construction, hygienic aspects)
(HYGIENE
hygienic aspects of hosp. construction)

LEBEDEV, Yu.D., red.; PEROTSKAYA, A.S., red.; CHERNAYENKO, T.D., red.; NOVIKOV, Yu.D., red.; POGOSKINA, M.V., tekhn. red.

[Hygiene in hospitals and sanatoriums] Gigiena bol'nits i sanatoriev. Moskva, Medgiz, 1961. 231 p. (MIRA 14:12)
(HOSPITALS—HYGIENE) (SANATORIUMS—HYGIENE)

PEROTSKAYA, A.S.; NEDOGIBCHENKO, M.K.; CHERNAYENKO, T.D.; LYUDKOVSKAYA, N.I., tekhn. red.

[Hygiene of populated areas; collection of official data]Gigiena naselennykh mest; sbornik ofitsial'nykh materialov. Moskva, Medgiz, 1962. 534 p. (MIRA 16:2)
(PUBLIC HEALTH)

GORBOV, Vsevolod Aleksandrovich, red.; PEROTSKAYA, Antonina Sergeyevna, red.; RYABOV, Vasiliy Nikolayevich, red.; CHERNAYENKO, Tat'yana Dmitriyevna, red.; PRONINA, N.D., tekhn. red.

[Sanitary protection of soil in populated places] Sanitarnaia okhrana pochvy naselennykh mest; metodicheskoe posobie dlia sanitarno-epidemiologicheskikh uchrezhdenii. Pod red.V.A.Gorbova i dr. Moskva, Medgiz, 1963. 175 p. (MIRA 16:9)

1. Russia (1923- U.S.S.R.) Ministerstvo zdravookhraneniya. (SOILS--ANALYSIS) (SOIL POLLUTION)

GUBERNSKIY, Yu.D.; LAMPERT, F.F.; CHERNAYENKO, T.D.

Conference and seminar on problems of hygienic study of model housing and hospital construction. Gig.i san. 28 no.1:115-116 Ja'63.
(MIRA 16:7)

(ARCHITECTURE, DOMESTIC--HYGIENIC ASPECTS)
(HOSPITALS--HYGIENE)

GORBOV, V.A., red.; RYABOV, V.N., red.; PEROTSKAYA, A.S., red.; CHERNAYENKO, T.D., red.; PROKOF'YEV, V.P., red.

[Basic problems of the sanitary protection of soil] Osnovnye voprosy sanitarnoi okhrany pochvy. Moskva, Meditsina, 1965. 344 p. (MIRA 18:5)

CHERNAYEV, I.I.; GOLOVNYA, V.A.; MOLODKIN, A.K.

Remarks on the article by D.I. Riabchikova, M.P. Volynets, V.A. Zarinskii and V.I. Ivanov "High-frequency titration. Report No.7: Thorium carbonate compounds". Zhur. anal. khim. 19 no.8:1036-1037 '64. (MIRA 17:11)

CHERNAYEV, V.I., inzhener

Caving-in soil with a vibrating wedge. Mekh. stroi. 12 no.4: 21-25 Ap '55. (MLRA 8:6)
(Earthwork) (Excavating machinery)

CHERNE, I.S.

"The operator of electric tower cranes for building." I.P.Barsov, A.I.Al'perovich. Reviewed by I.S.Cherne. Mekh.stroi.12 no.12:29-30 D '55. (MLRA 9:2)
(Cranes, derricks, etc.) (Barsov, I.P.) (Al'perovich, A.I.)

CHERNE, J.

[redacted]

Sandwich structures. Technika 7 no.10:2 O '63.

CHERNE, Kh. I.

"Circuits for Measuring Shunt Type Impedances with Negative Resistance Components," Svyaz'izdat, 1948.

CHERNE, Kh. I

USSR/Electronics - Measurements, Sep/Oct 49
Impedance
Bridge Circuits

"Systems for Measuring Shunt-Type Impedances With a Negative Real Component," Kh. I. Cherne, Cand Tech Sci

"Radiotekh" Vol IV, No 5, pp 63-71

Describes subject systems and deduces formulas for detg the neg real component and the inductive or capacitive reactance component of an impedance as functions of the values of the elements forming

206T57

USSR/Electronics - Measurements, Sep/Oct 49
Impedance (Contd)

the arms of a bridge in balance. Investigates problems of the stability of this impedance during measurements. Submitted 14 May 49.

206T57

USSR/Electronics - Communication Theory

Card 1/1 Pub. 90, 3/9

Author : Cherne, Kh. I.

Title : Theory of single-tube oscillator with resistance and capacitance

Periodical : Radiotekhnika, 10, 21-28, Feb 55

Abstract : A single-tube oscillator, with an input through a four-pole circuit network having resistance and capacitance, as originally proposed by Siforov, V. I., are valuable for generation of low-power, stable sinusoidal waves. An equation for free oscillations in the circuit was derived, which was applied for analysis of individual cases to establish the general mechanism of operation of the oscillator. Conclusions from the experiment were that the free oscillations are set up when more than two four-pole networks are included in the feed-back circuit, and that, as the number of four-pole networks in the feed-back circuit increases, the frequency of oscillations will also increase.

Institution: --

Submitted : February 12, 1953

CHERNE, KH. I.

TELEGRAPHY

"Analysis of Circuits Used to Switch DC Telegraph Apparatus" by Kh.I. Cherne, Elektrosvyaz', No 5, May 1957, pp 52-60.

Determination of the laws of variation of current flowing through the electromagnets of telegraph sets, connected to a short aerial line with dc supply.

Card 1/1

CHERNE, Kh.I.

Use of inductive couplings in electric filters. Elektrosviaz' 10 no.6:52-62 Je '56. (MLRA 9:8)
(Electric filters)

CHERNE, Kh.I.

Using inductance coils with outlets in electric filters.
Elektrosviaz' 10 no.8:52-59 Ag '56. (MLRA 9:9)
(Electric filters)

CHERNE, Kh.I.

112-2-2650

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 2, p.6 (USSR)

AUTHOR: Cherne, Kh.I.

TITLE: The Design of a Quadripole having a Logarithmic Frequency Characteristic (Raschet chetyrekhpolyusnika s logarifmicheskoy chastotnoy kharakteristikoy)

PERIODICAL: Sb. tr. Leningr. elektrotekh. in-ta svyazi, 1956, Nr C, pp. 25-34

ABSTRACT: Bibliographic entry.

Card 1/1

Cherne, Kh. I.

CIRCUITS

"Analysis of Circuits for the Neutralization of Internal Feedback in Junction Transistors at Low Frequencies" by Kh. I. Cherne. Elektrosvyaz', No 12, December 1957, pp 9-16.

In view of the fact that a transistor transmits power in both directions at all frequencies (unlike a vacuum tube) the authors examine the g-neutralization (i.e. the use of a parallel-series neutralizing linear passive four-terminal network) of junction transistors with common emitter and with common collector. A circuit theoretical analysis is given and certain experimental results are indicated. Reference is made to Houser's "A Unilateral Transistor Amplifier" (Proceedings of the National Electronics Conference, Vol. XI, 1955) and Stern, Aldridge and Chow's "Internal Feedback and Neutralization of Transistor Amplifier", (Proceedings IRE, No 7, 1955).

Card: 1/1

CHERNE, Kh. I.

108-7-6/13

AUTHOR: CHERNE,Kh.I.

TITLE: Some Problems concerning the Application of the Fourpole Theory to the Computation of Current Circuits which contain Transistors. (Nekotoryye voprosy primeneniya teorii chetyrekhpolyusnika k raschetu tsepey, soderzhashchikh transistory, Russian)

PERIODICAL: Radiotekhnika, 1957, Vol 12, Nr 7, pp 41-50 (U.S.S.R.)

ABSTRACT: Here relations are derived by means of which the use of formulae, tables and conclusions from the fourpole theory is facilitated. At first the relations between the fourpole parameter systems which are used in literature for transistors, and the analogous parameter systems which are used in the general fourpole theory are derived. After this some relations are derived which are used when computing complicated current circuits with transistors, i.e. the relations are given between the various fourpole parameters at different wiring diagrams. In conclusion an example of a current circuit with transistors is calculated. (With 5 Illustrations and 4 Slavic References).

ASSOCIATION: Not given

PRESENTED BY:

SUBMITTED: 29.10.1956

AVAILABLE: Library of Congress

Card 1/1

CHERNE, Kh. I.

CIRCUITS & CIRCUIT ELEMENTS

"Certain Problems in the Application of the Theory of Four Terminal Networks to the Design of Transistor Circuits," by Kh.I. Cherne, Radiotekhnika, No 7, July 1957, pp 41-50.

It is known that if a transistor is operating at weak signals, it can be considered as a linear irreversible four-terminal network, regardless of the method of connection (grounded base, grounded emitter, or grounded collector). In this case the analysis of transistor circuit can be made with methods developed in the ordinary four-terminal network theory. In practical applications, however, there are some inconsistencies between the notation and current directions adopted in transistor circuitry and those employed in four-terminal network theory. This article is devoted to a reconciliation of the two practices and contains an extensive list of matrix equations for various transistor circuits.

Card 1/1

CHERNE, KH. I.

AUTHOR: Cherne, Kh. I. 103-12-11/12

TITLE: A Review of G. I. Atabekov book on "Harmonic Analysis and Operational Method" (Retsenziya na knigu G. I. Atabekova "Garmonicheskiy analiz i operatornyy metod").

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol. 18, Nr 12, pp. 1146-1147 (USSR)

ABSTRACT: The book by Professor G. I. Atabekov consists of three parts: 1) Periodic nonsinosoidal processes (Fourier's Series) 2) non-periodic processes (Fourier's integral) 3) Investigation of the transition processes with the operator method. (Laplace-transformation) This work is a textbook for the faculties for radio and electrical engineering of the Moscow Institute for aeronautics. The book also contains chapters, which exceed the framework of the curriculum and are intended for aspirants. The author considers the laplace transformation as a further generalization of the Fourier integral and the latter as a development of the Fourier series. In this way, the whole book is complete in itself. The book explains the connections of the spectral characteristic of a nonperiodic function

Card 1/2

A Review of G. I. Atabekov book on "Harmonic Analysis and Operational 103-12-11/12

with the enveloppe of the spectrum of the periodic non-sinosoidal function and the problem of the degree of convergence of the coefficients of the Fourier Series and their spectral characteristics is dealt with in detail. Formulae are laid down, which make it possible to find the time-function according to the spectral characteristics in a short time. An investigation is added of the transition processes in a passive dipole at given frequency characteristics of the conductance and susceptance of the circuit. The third part of the book is the most voluminuous and illustrated with many examples.

AVAILABLE: Library of Congress

Card 2/2

AUTHOR: Cherne, Kh. I., Regular Member of the Society

SOV/108-13-2-11/15

TITLE: Interrelation of 3 Triode Transistor Parameters in Various Triode Circuits (Vzaimosvyaz' mezhdu parametrami poluprovodnikovogo trioda v razlichnykh skhemakh yego vklyucheniya)

PERIODICAL: Radiotekhnika, 1958, Vol 13, Nr 2, pp. 69-78 (USSR)
Received: April 25, 1958

ABSTRACT: If 4 parameters of the triode in the given circuit diagrams are known, it is possible to determine any other parameter of the triode in the same circuit diagram according to the formulae (6) to (15), if necessary. Often the triode parameters in any circuit diagram have to be determined according to the given parameters of the triode in another circuit diagram. This problem is solved in references 7-10 in application to the resistance- or conductivity parameters of the triode. However, in the computation of a series of circuits with semiconductor triodes, e. g. of circuits for the neutralization of the internal feed-back in the triodes, there is the necessity of determining not only the resistance- and conductivity parameters of the triode, but

Card 1/3

also other parameters of the given circuit according to any known parameters in another circuit of the triode. Here formulae are derived for these purposes which express the connection between the triode parameters in different circuits of the triode. These are the following:
1) Formulae for the computation of the triode parameters in a circuit with common base according to known parameters of this triode in a circuit with common emitter,
2) formulae for the computation of the triode parameters in a circuit with common base according to known parameters of this triode in a circuit with common collector,
3) formulae for the computation of the triode parameters in a circuit with common emitter according to the known parameters of this triode in a circuit with common base
4) formulae for the computation of the triode parameters in a circuit with common emitter according to the known parameters of this triode in a circuit with common collector,
5) formulae for the computation of the triode parameters in a circuit with common collector according to the known parameters of this triode in a circuit with common base,
6) formulae for the computation of the triode paramaters

in a circuit with common collector according to the known parameters of this triode in a circuit with common emitter. Finally an example is given for the pratical application of these formulae.
There are 10 references, 4 of which are Soviet.

SUBMITTED: July 10, 1957

Association: Deyxtvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi im. A. S. Popova.

AUTHOR: Cherne, Kh.I. SOV/106-59-2-5/11

TITLE: Design of a Parallel Neutralisation Circuit for a Tuned, Junction-transistor Amplifier (Raschet parallel'noy skhemy neytralizatsii rezonansnogo usilitelya na ploskostnom tranzistore)

PERIODICAL: Elektrosvyaz', 1959, Nr 2, pp 33 - 42 (USSR)

ABSTRACT: The article considers the design of the parallel type of circuit for neutralisation of the feedback in a junction transistor with a common emitter used for weak signals in a high-frequency amplifier. Published formulae for the design of particular circuits have been based on the assumption that the parameters of the so-called natural Π-form, equivalent circuit of the transistor are known and that the transformer in the neutralisation circuit is ideal. In practice, the transformer is not ideal and the parameters may not be known. The present design method does not make these assumptions. Figure 1 shows the skeleton circuit of a transistor amplifier with a parallel neutralising circuit. It consists of the transistor and a neutralising, four-terminal network (usually containing passive, linear elements). The design formulae are based on the admittance

Card1/3

parameters of the four-terminal network and take into account the finite value of the transformer inductance and the stray inductance. Table 1 gives expressions for some linear, four-terminal network characteristics expressed in terms of its admittances. The condition for neutralisation is $y_{12} = 0$ and for the circuit of Figure 1:

$$y_{12Э} + y_{12H} = 0 \qquad (5)$$

where Э signifies emitter and H neutralising network. If the equality (5) is to be fulfilled over a wide frequency band, then comparatively complex neutralising circuits are necessary, increasing the cost and complicating the tuning. The simplest practical case is shown in Figure 3 and Figure 4. The formula for which the neutralisation condition holds for the circuit of Figure 4 is derived, expressed in matrix form (Eq 10). The design is first developed assuming an ideal transformer. Figure 5 shows the change in the parameter y_{12} as a function of frequency. The simplest four-terminal network,

Design of a Parallel Neutralisation Circuit for a Tuned, Junction-transistor Amplifier

the parameter y_{12} of which changes by the same law but with the reverse sign is shown in Figure 7. Formulae (13) and (14) give the values for the resistor and the capacitor required for a given frequency-band. The formulae are then modified to take into account the stray inductance and the finite transformer inductance (Eqs 23 and 24). Because of stray capacities, the values have to be trimmed to obtain optimum results. The procedure is described and the circuit used shown in Figure 11. Experimentally measured results are given for neutralisation at 600 kc/s (r = 32.5 kΩ, C = 33 pF). There are 14 figures, 1 table and 18 references, 5 of which are English, 3 German, 1 French and 9 Soviet.

SUBMITTED: September 18, 1958

CHERNE, Kh.I.

Use of simple four terminal inductively coupled networks in electric filters. Elektrosviaz' 14 no.1:65-70 Ja '60. (MIRA 13:5)

(Electric filters)

89833

S/106/60/000/011/009/010
A055/A033

9,1400

AUTHOR: Cherne, Kh. I.

TITLE: Nomograms for Calculation of Magnitudes Characterizing Mismatch Attenuation

PERIODICAL: Elektrosvyaz', 1960, No. 11, pp. 71 - 74

TEXT: The well-known formula

$$b = \ln\left|\frac{Z + W}{Z - W}\right| \qquad (1)$$

allows to calculate mismatch attenuation, echo attenuation and other similar magnitudes, depending on what $\underline{Z}$ and $\underline{W}$ stand for. Thus, if $\underline{Z}$ is the wave impedance of the line and $\underline{W}$ the load impedance, $\underline{b}$ will stand for the mismatch attenuation, which is calculated in this particular case. The calculation by means of formula (1) is however long and difficult if $\underline{Z}$ and $\underline{W}$ are complex numbers and if $\underline{b}$ must be determined for a certain frequency range. A circular nomogram allowing a rapid calculation of $\underline{b}$ was already described in

Card 1/3

Nomograms for Calculation of Magnitudes Characterizing Mismatch Attenuation

technical literature (Nitz, Fernmeldepraxis, Nos. 19 and 20, 1958), but this nomogram is not easy to use and its accuracy is not very great. New nomograms, eliminating these two defects, have been, therefore, developed by the author. Another advantage of these new nomograms is that they also allow to calculate the reflection factor

$$p = \frac{|Z - W|}{|Z + W|} \qquad (2)$$

As shown in an addition to this article, formulae (1) and (2) can be given the following form respectively:

$$\text{cth } b = \frac{\text{ch ln } M}{\cos \varphi}, \qquad (3)$$

and

$$\frac{1}{\cos 2 \text{ arctg } p} = \frac{\text{ch ln } M}{\cos \varphi} \qquad (4)$$

Card 2/ 3

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Nomograms for Calculation of Magnitudes Characterizing Mismatch Attenuation

where $M|\underline{\Psi} = \frac{Z}{W}$ (5) or $M|\underline{\Psi} = \frac{W}{Z}$ (6)

Two rectangular nomograms can be constructed, corresponding to formulae (3) and (4). Each of these nomograms consists of three scales and allows to calculate b and p. They differ inasmuch as one of them permits to calculate more accurately small values of p and large values of b. Both nomograms are reproduced in the article, the way of using them is explained, and several examples of calculating b and p are given. There are 2 figures and 3 reference: 2 Soviet and 1 non-Soviet.

Card 3/3

23606

S/108/61/000/006/002/008
D201/D305

9,3230

AUTHOR: Cherne, Kh.I., Member of the Society (See Association)

TITLE: The response to certain signals of a LP filter.having a trapezoidal frequency and linear phase characteristics

PERIODICAL: Radiotekhnika, no. 6, 1961, 14 - 23

TEXT: The expressions for evaluating the response of a low-pass filter with the characteristic shown in Fig. 1 to step, rectangular etc., input voltages have been derived elsewhere (Ref. 1: E.V. Zelyakh, and A.R. Livshits, Integral Fur'ye i yego primeneniye k resheniyu nekotorykh zadach impul'snoy tekhniki (The Fourier Integral and its Use in Solving Some Problems in Impulse Engineering), Leningrad, 1951), (Ref. 2: V.I. Siforov, Analiz prokhozhdeniya signal'nykh impul'sov i pomekh cherez priyemniyye ustroystva impul'snoy radionavigatsii, Trudy LKVVIA, No. 13, 1947) and (Ref. 3: Kh. I. Cherne, Elektrosvyaz', No. 3, 1961). In the present article the

Card 1/9

The response to certain ...

author solves the problem of the response of a filter with a trapezoidal amplitude frequency and linear phase frequency characteristic (Fig. 2) to a step, rectangular and sine-squared input voltages. The characteristics of Fig. 2 are given by the following expressions:

$$h(\omega) = 0 \qquad (1)$$

for $\omega \leq -\omega_2$ and $\omega \geq \omega_2$;

$$h(\omega) = \frac{K(\omega + \omega_2)}{\omega_2 - \omega_1} e^{-i\omega t_o} \qquad (2)$$

for $-\omega_2 \leq \omega \leq -\omega_1$;

$$h(\omega) = K e^{-i\omega t_o} \qquad (3)$$

for $-\omega_1 \leq \omega \leq \omega_1$

and

$$h(\omega) = \frac{K(\omega_2 - \omega)}{\omega_2 - \omega_1} e^{-i\omega t_o} \qquad (4)$$

Card 2/9

The response to certain ...

for $\omega_1 \leq \omega \leq \omega_2$. Such a filter is an idealized system and although the amplitude and phase characteristic are incompatible, the results obtained can find in certain cases practical application. The filter of Fig. 1 will be called an ideal filter while that of Fig. 2 an idealized filter. The response $f_2(t)$ of the idealized filter to a step voltage (Fig. 3) which has the expression

$$f_1(t) = \frac{E}{2}\left(1 + \frac{1}{\pi}\int_{-\infty}^{\infty}\frac{\sin\omega t}{\omega}d\omega\right). \qquad (5)$$

(Ref. 1: Op.cit.) is derived, applying to Eq. (5) Eqs. (1) - (4). It then becomes

$$f_2(t) = \varphi_2(t) + \psi_2(t) \qquad (6)$$

where $\varphi_2(t)$ - the response of the ideal filter to a step input voltage

$$\varphi_2(t) = \frac{EK}{2}\left[1 + \frac{2}{\pi}\int_0^{\omega_1}\frac{\sin\omega(t-t_0)}{\omega}d\omega\right], \qquad (7)$$

Card 3/9

The response to certain ...

and $\psi_2(t)$ - the component of the response due to the presence of slopes in the amplitude characteristic and is given by

$$\psi_2(t) = U_0 \left[\int_{-\omega_2}^{-\omega_1} \frac{\omega + \omega_2}{\omega} \sin \omega (t - t_0)\, d\omega + \int_{\omega_1}^{\omega_2} \frac{\omega_2 - \omega}{\omega} \sin \omega (t - t_0)\, d\omega \right]. \quad (8)$$

where

$$U_0 = \frac{EK}{2\pi(\omega_2 - \omega_1)} . \quad (9)$$

Eventually, after several transformations, the response of idealized filter $f_2(t)$ to a step input voltage is derived as

$$f_2(t) = EK \left\{ \frac{1}{2} + \frac{1}{\pi(\eta - 1)} \left[\eta \operatorname{Si} \eta x - \operatorname{Si} x - \frac{1}{x} (\cos x - \cos \eta x) \right] \right\} \quad (12)$$

where $x = \omega_1(t - t_0)$ (a), and $\eta = \frac{\omega_2}{\omega_1}$. (13)

Card 4/9

The response to certain ...

For x = 0 applying the Lopital rule

$$f_2(t) = \frac{EK}{2} \tag{14}$$

is obtained and for $\eta = 1$

$$f_2(t) = EK\left(\frac{1}{2} + \frac{Six}{\pi}\right). \tag{15}$$

The response of the idealized filter to a rectangular input voltage, represented by

$$f_1(t) = \frac{E}{\pi}\int_{-\infty}^{\infty} \frac{\sin\frac{\omega\tau}{2}}{\omega} e^{i\omega t}\, d\omega \tag{16}$$

is derived in a manner analogous to

$$f_2(t) = \frac{EK}{\pi(\eta_2 - \eta_1)}\left\{\eta_2\left[\mathrm{Si}\,\pi\eta_2(1+2x) + \mathrm{Si}\,\pi\eta_2(1-2x)\right] - \right. \tag{22}$$

$$\left. - \eta_1\left[\mathrm{Si}\,\pi\eta_1(1+2x) + \mathrm{Si}\,\pi\eta_1(1-2x)\right] - \left[\frac{\cos\pi\eta_1(1+2x) - \cos\pi\eta_2(1+2x)}{\pi(1+2x)} + \right.\right.$$

Card 5/9

The response to certain ...

$$+\frac{\cos\pi\eta_2(1-2x)-\cos\pi\eta_2(1-2x)}{\pi(1-2x)}\Big]\Big]. \qquad (22)$$

where x, η, and η_2 are given by

$$x = \frac{t - t_o}{\tau} \text{ (a)} \qquad \eta_1 = \tau f_1 \text{ (b)} \qquad \eta_2 = \tau f_2 \text{ (c)} \quad (21)$$

respectively. Eq. (22) can be used for all values of x except x = 0.5 and x = - 0.5. Again by applying the Lopital's rule Eq. (22) for the two above values of x becomes

$$f_2(t) = \frac{EK}{\pi(\eta_2-\eta_1)}\left(\eta_2 \operatorname{Si} 2\pi\eta_2 - \eta_1 \operatorname{Si} 2\pi\eta_1 - \frac{\cos 2\pi\eta_1 - \cos 2\pi\eta_2}{2\pi}\right). \qquad (23)$$

Finally the response to the idealized filter to a sine-squared input voltage is derived. The complex spectral function of such a pulse is given (Ref. 3: Op.cit.) by

Card 6/9

The response to certain ...

$$\overline{\varphi(\omega)} = \frac{2E\omega_0^2 \sin\frac{\omega\tau}{2}}{\pi\omega\left(4\omega_0^2 - \omega^2\right)} e^{-j\frac{\omega\tau}{2}}, \qquad (24)$$

where $\tau = \frac{T_0}{2}$ (a) $\qquad \omega_0 = \frac{2\pi}{T_0} = \frac{\pi}{\tau}$ (b) (25)

The graphs of the response curves of an idealized low-pass filter to a sine-squared input pulse with $\eta_1 = 2$ are given in Fig. 10. The graphs show that the response approaches the shape of the original pulse with an increasing η. There are 10 figures and 4 Soviet-bloc references.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrossvyazi im. A.S. Popova (Radio Engineering and Electrical Communications Society im. A.S. Popov). [Abstractor's note: Name of association taken from first page of journal]

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Card 7/9

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Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25896

Author : V.I. Yavoyskiy, D.F. Chernega
Title : Migration of Hydrogen in Hard Steel Under Influence of Electric Field.

Orig Pub : Stal', 1956, No 9, 790 - 793.

Abstract : Hydrogen moves from the anode to the cathode in a constant electric field in specimens of highly and medium carbon steels, as well as in Mc steels. This shows that hydrogen is present in steel as H^+. This effect is not present in low-carbon and Si steels.

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Card : 1/1